



Monterey Bay National Marine Sanctuary

Citizen Watershed Monitoring Network



August 15th SAC Meeting
Anna Holden-Martz

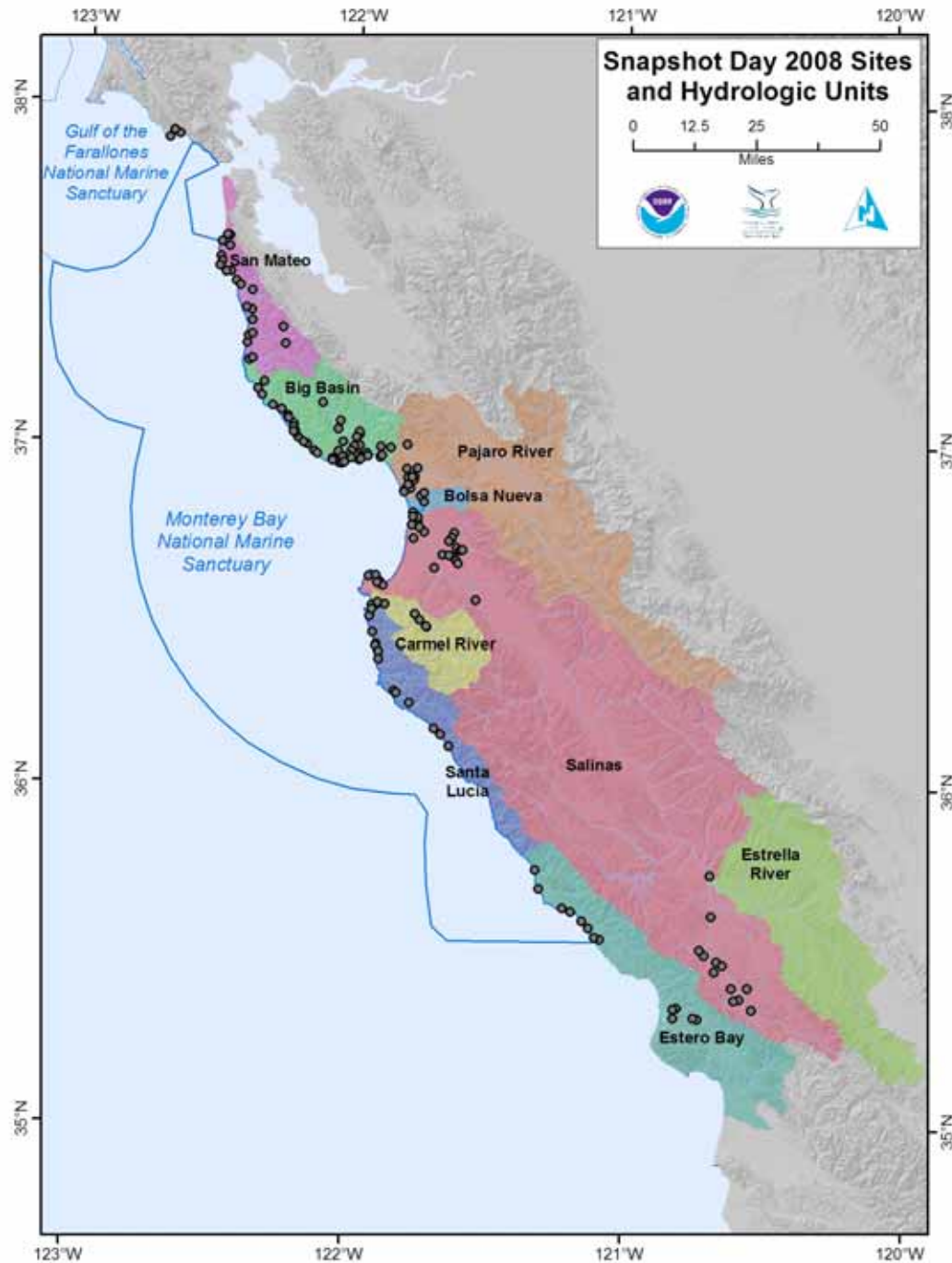
The Role of the Network

- Comprehensive monitoring of sanctuary watersheds
- Resource for other citizen monitoring programs
- Coordinate three annual programs



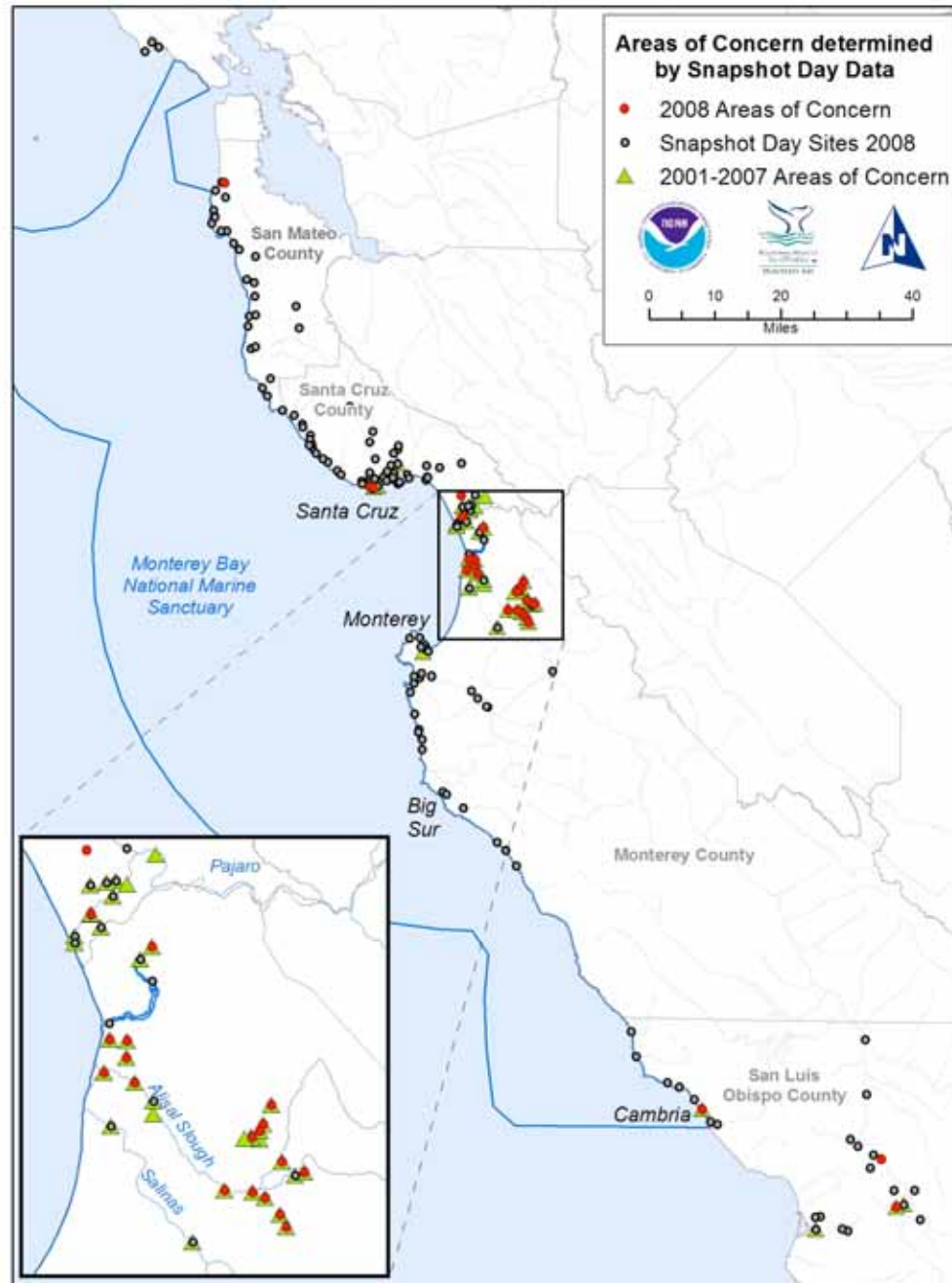
Snapshot Day

- First Saturday in May
- Next year marks 10th anniversary
- Partners
- This year, 180 volunteers sampled 166 sites
- Protocols and parameters



Snapshot Day

Areas of Concern



Urban Watch



- Dry season monitoring program
- Contracted by cities of Pacific Grove and Monterey
- Program ongoing for 11 years with several seasoned volunteers

Urban Watch Procedures

- Monitoring design/schedule
- Field measurements
- Water sample test parameters
- Monthly bacteria samples
- Backyard to Bay educational events



July '08 Urban Watch results

Monterey Bay Sanctuary Citizen Watershed Monitoring Network

Pacific Grove Urban Watch '08

Fast Facts for July

Average Detections for July (ppm)

Number of volunteers: 6

Number of volunteer hours: 60

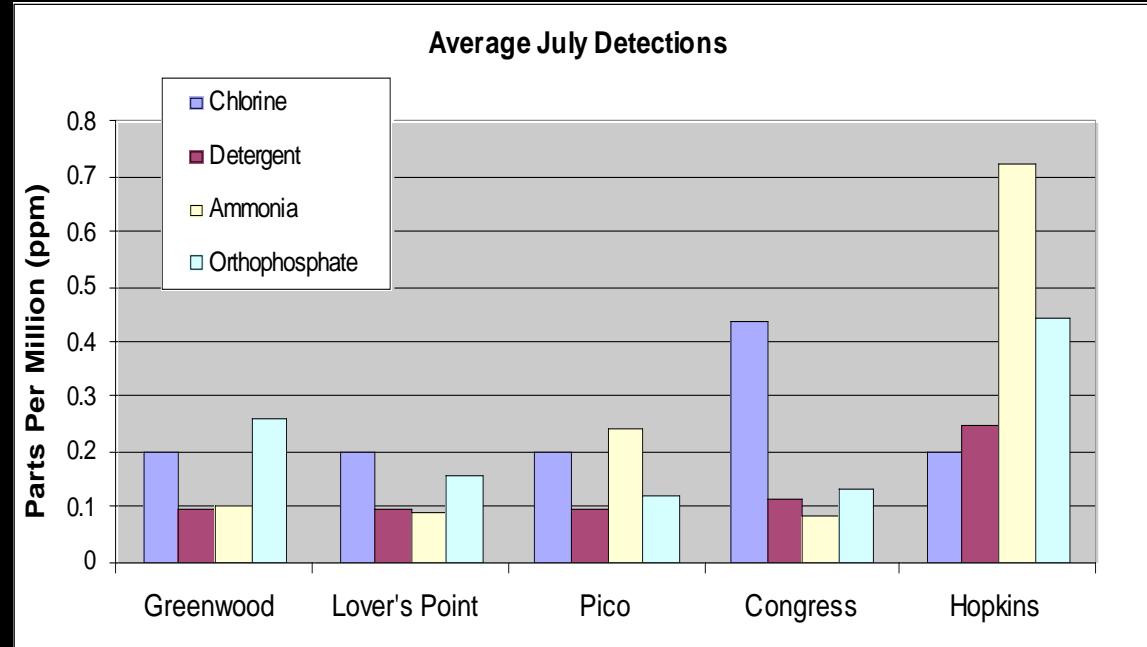
Total season volunteer hours: 140

Monitoring Dates:
July 1st, 16th, 20th,
28th and 29th

Unusual Occurrences

On July 28th the Hopkins outfall was milky white, had a detergent reading of 0.7 ppm and had an orthophosphate reading out of range on the meter, which converts to with >0.9 ppm PO₄-P (WQO 0.12ppm)!

Congress had a high chlorine reading with 0.8 ppm on the 28th.



Trash / Cleanup: Trash was down at all sites each sampling day! Just a few plastic bags, water bottles, and candy wrappers. In fact, on the 29th all five sites were litter free!

Dry Run and First Flush

- Volunteer training and purpose of Dry Run
- Field measurements
- Lab analysis
- Logistics



2007 First Flush and Dry Run

September 22nd and December 5th

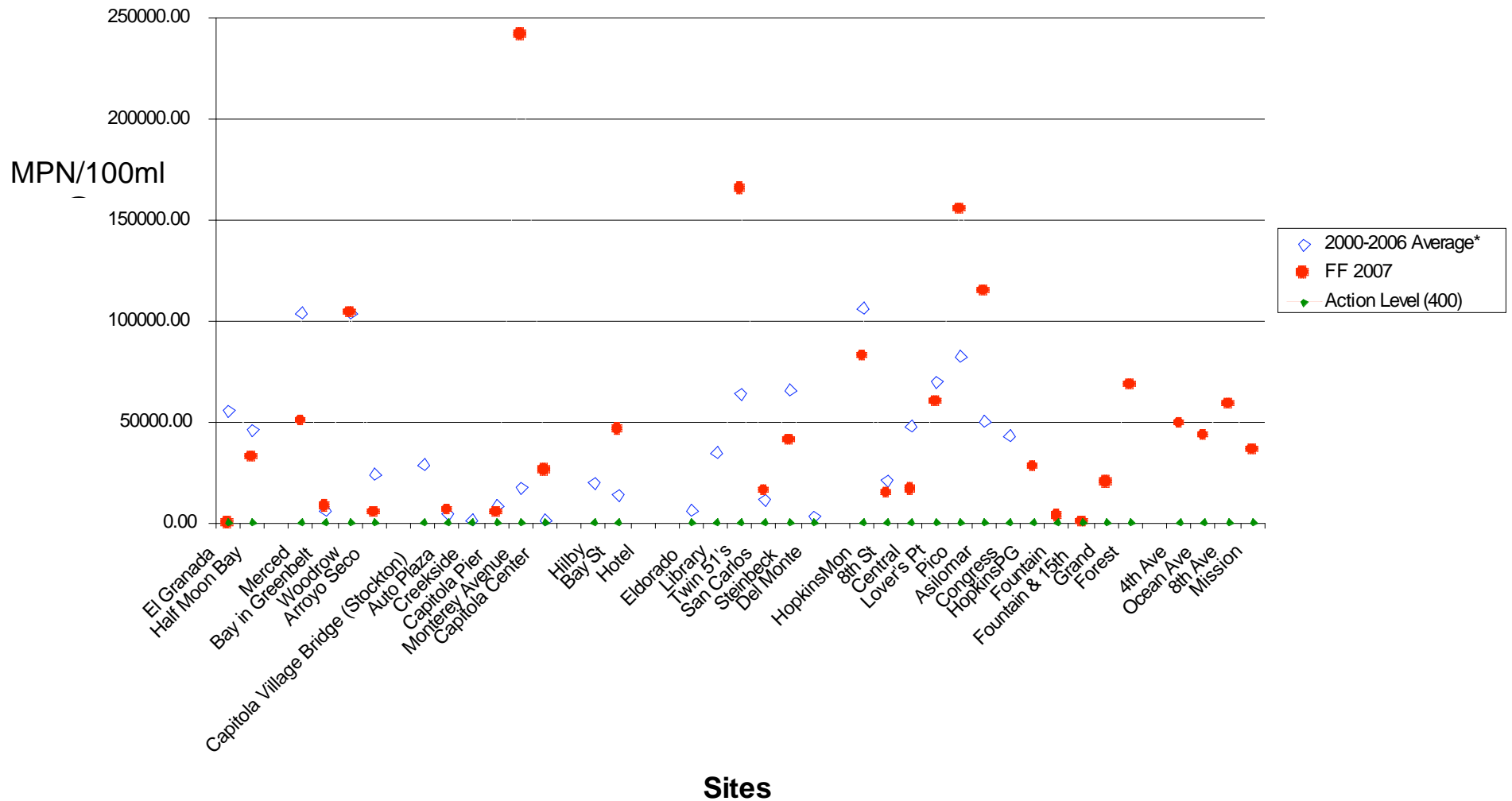
Factors for the '07 Flush:

- Early rain
- Late volunteer training
- Expanded monitoring sites
- New coordinator



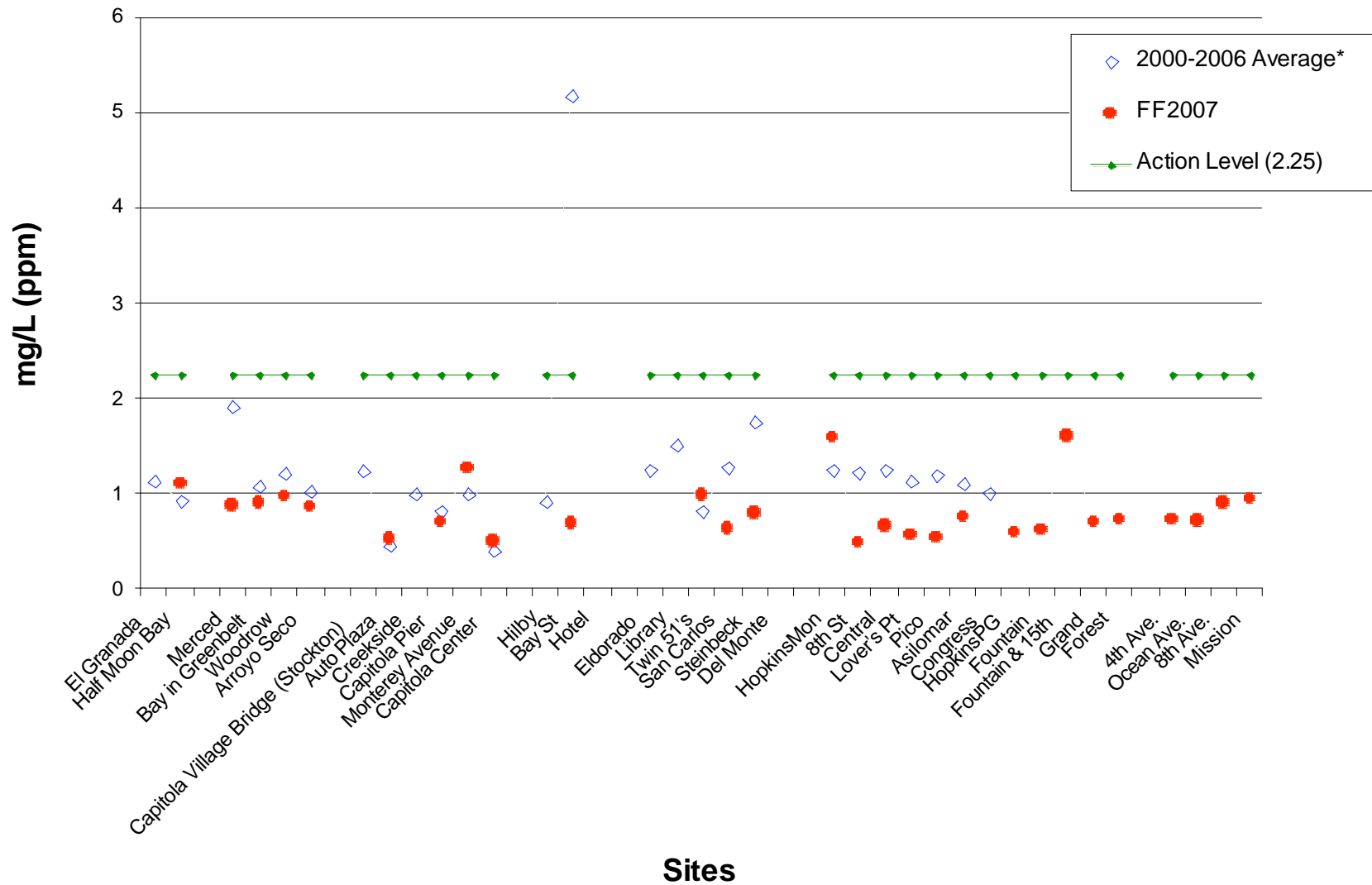
First Flush *E. coli*

Time Series Average of E.coli Concentrations Compared to 2000-2006 Average Concentrations



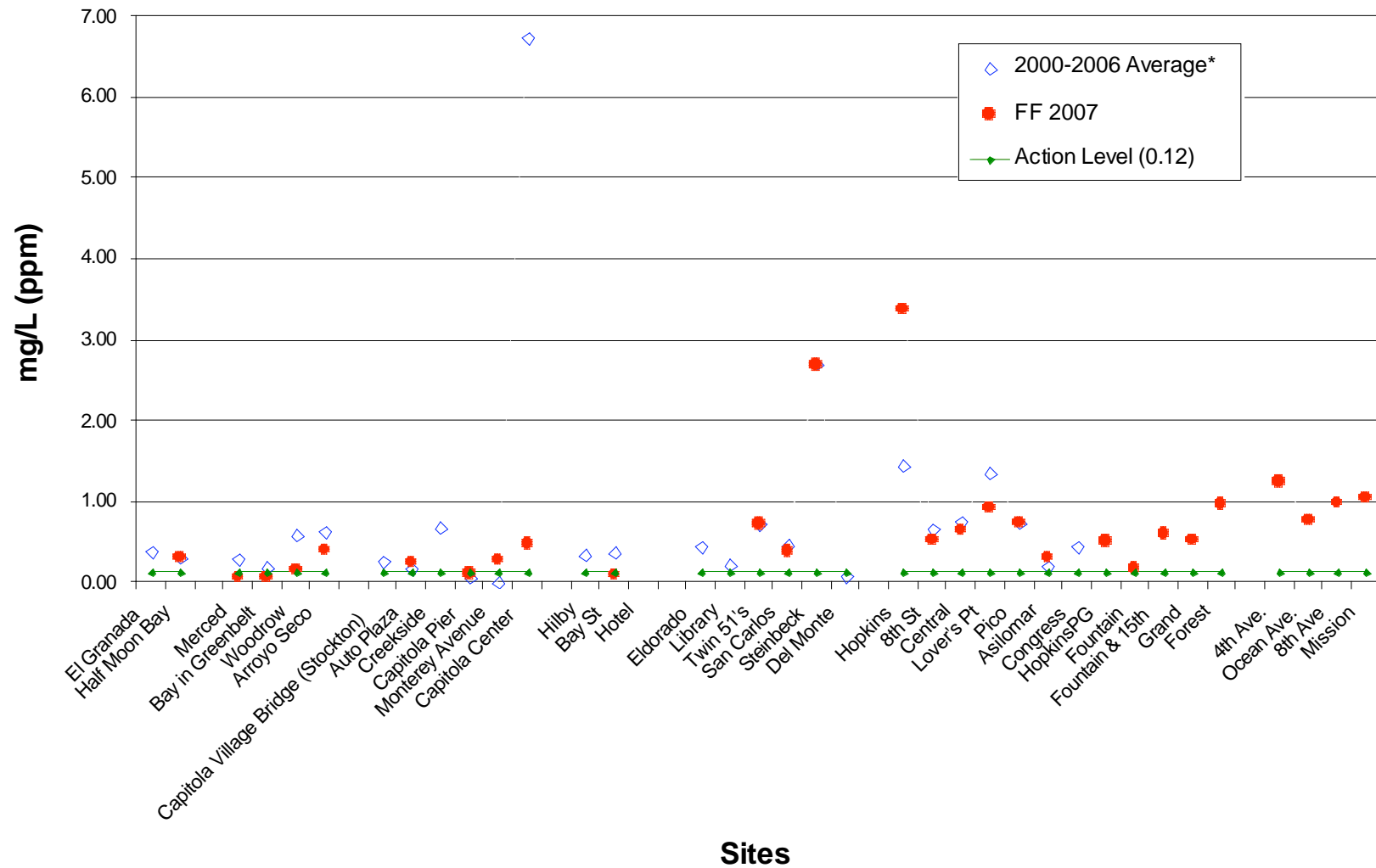
First Flush Nitrate (NO₃-N)

Nitrate Concentrations Compared to Previous Year's Average Concentrations



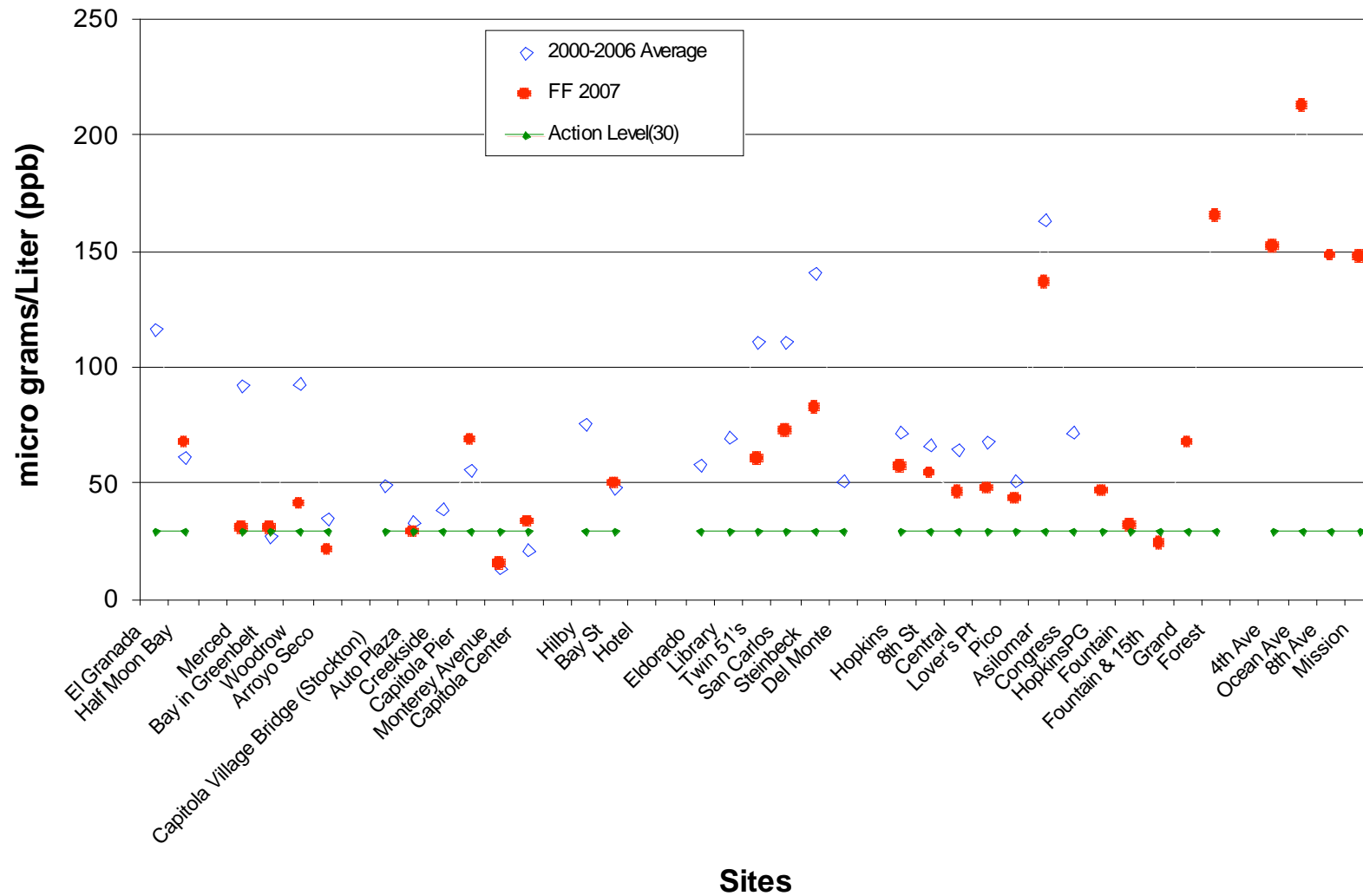
First Flush Orthophosphate (PO₄-P)

Time Series Average of Orthophosphate Concentrations Compared with 2000-2006 Average Concentrations

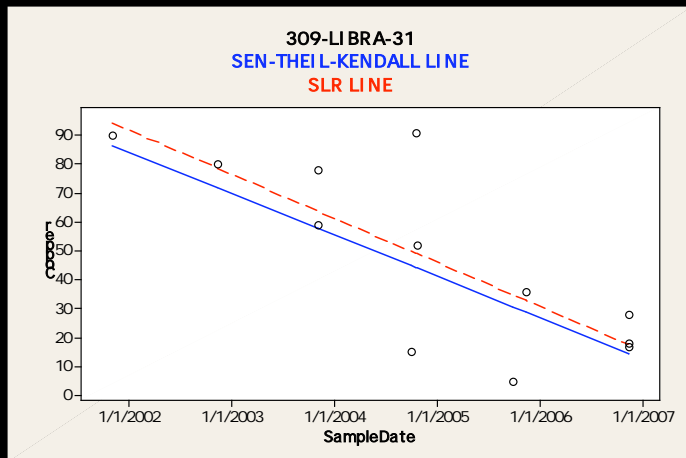


First Flush Copper

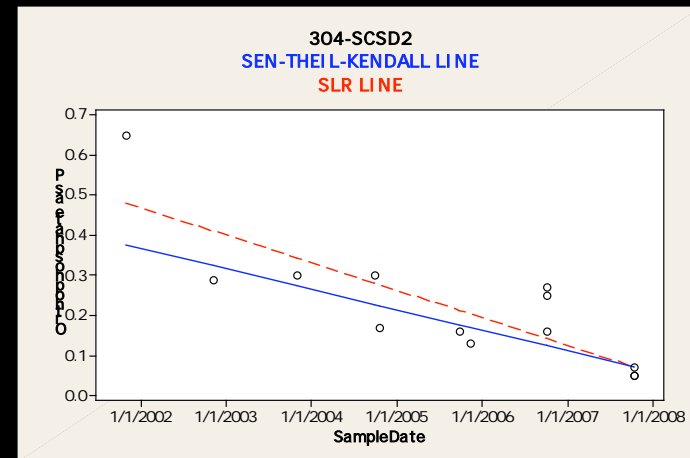
Average Time Series Copper Concentrations Compared with 2000-2006 Average Concentrations



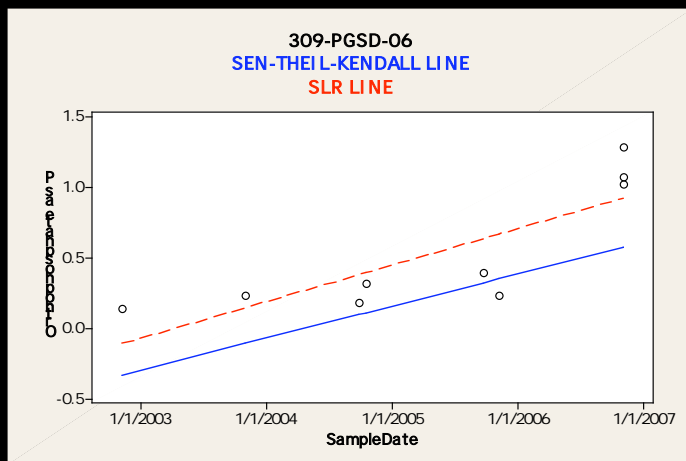
First Flush Trends



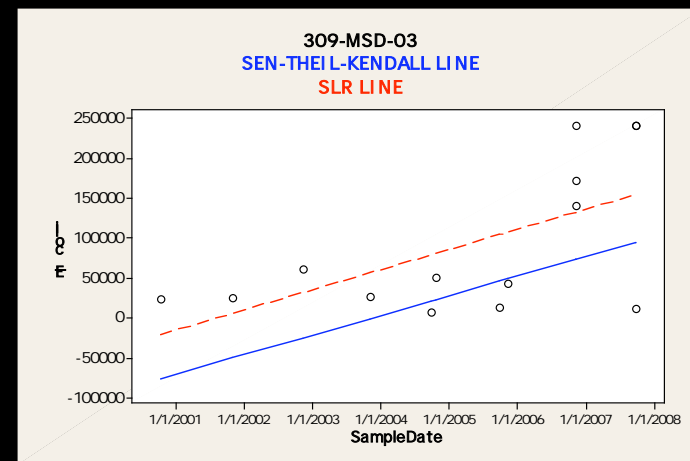
Copper trend at Library



Orthophosphate trend in Santa Cruz



Orthophosphate trend at Congress



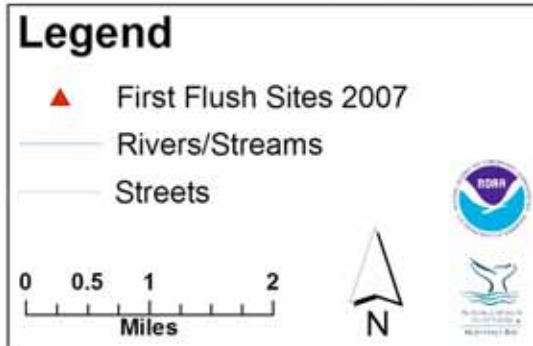
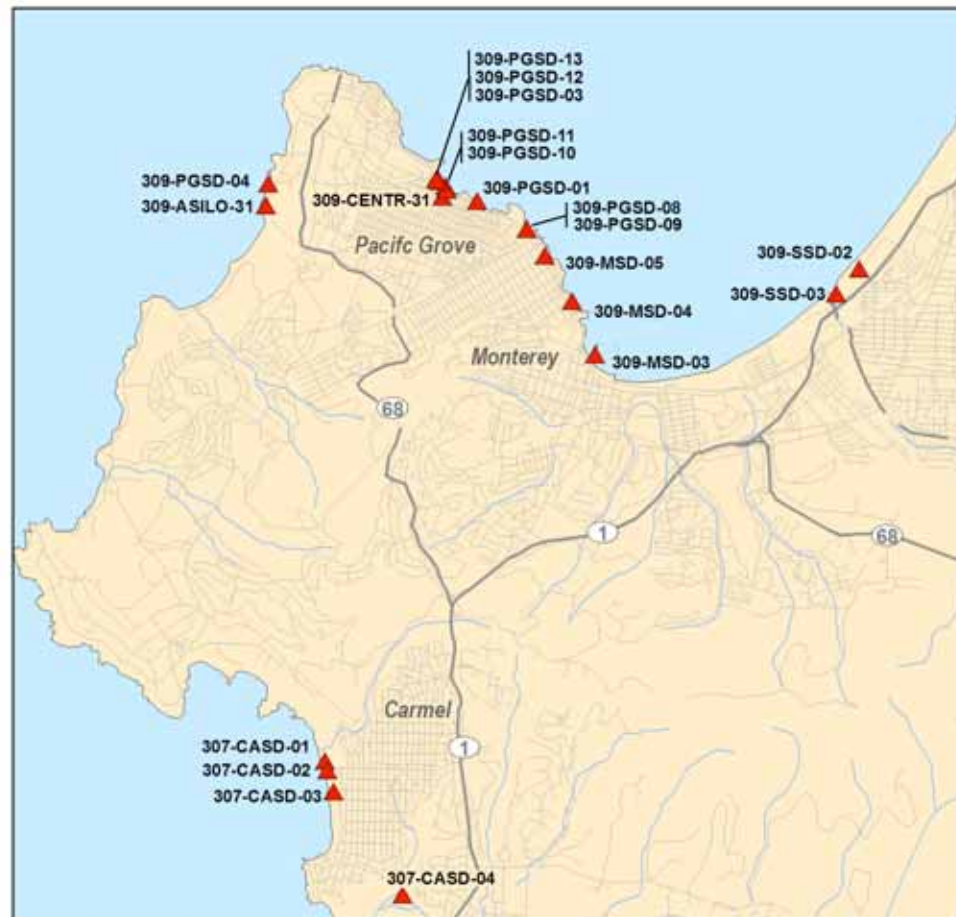
E.coli trend at Twins

Outcomes of Network Monitoring

- Expanded monitoring
- Upstream source tracking
- City ordinances
- Cleaner Beaches--Dry weather diversions



Expanded Monitoring: Monterey County Sites



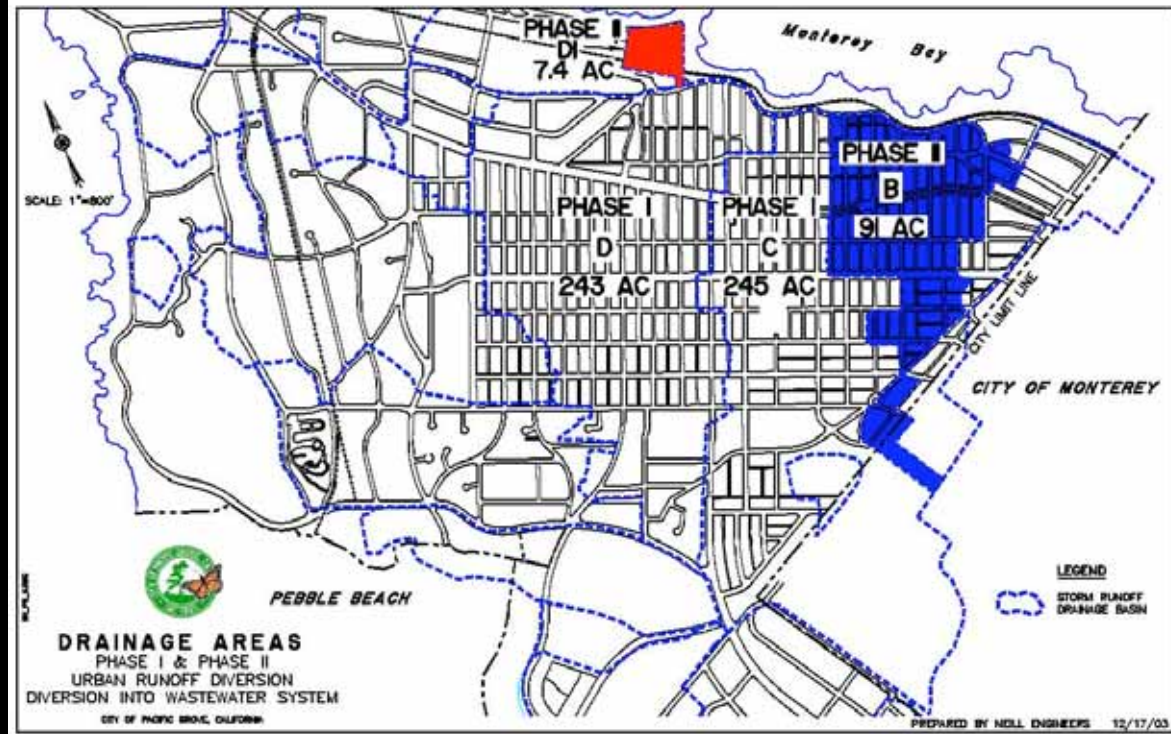
Map provided by: Sophie De Beukelaer

Upstream Source Tracking in the Steinbeck Plaza drainage

- Historically high levels of copper and bacteria
- May 5th, ISCO sampler placed for 24 hours
- Ran each sample for orthophosphate on UW meter; lab analyzed for *E.coli*
- On high orthophosphate readings, tested sample for copper
- Results showed correlation between high orthophosphate levels and high copper levels. No correlation between orthophosphate and *E.coli*.

City Ordinances/Diversions

- Monterey cracks down on pressure washing and commercial car washing
- Pacific Grove Dry Weather Diversion
- Seaside proposed Diversion project



Berwick Park Sump

Average concentration of bacteria = 11,000 MPN/100ml.
Total gallons pumped to MRWPCA = 2 million!

Central California Water Quality Data **S**ynthesis, **A**ssessment and **M**anagement (**SAM**) Project



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Conclusion and Next Steps

- What we know
- Why it is important
- Next steps for the Network

Questions?

